



ABSTRACT

A particulate catalytic reactor for an internal combustion engine comprises a unique metallic substrate in the form of a knitted metal fabric which, when coated with catalytic materials, will continuously oxidize carbon particles that enter it. The manufacturing process for producing the particulate reactor substrate according to the invention includes the steps of first roll-stamping small, raised dimples into the fabric substrate to control its coiled density. The dimples stand off adjacent layers in the coiled roll, creating greater space between the layers. The dimpled fabric then undergoes high temperature firing for hardening and degreasing, and then water quenching to harden the metal which improves heat tolerance. The treated metal weave is then aluminum oxide shot-blasted to etch the fabric surface for improved ceramic coating adhesion and to increase surface area. Next, the fabric is coated with a wet slurry of an undercoating ("wash coat") prior to spooling and pressing the fabric into individualized cartridges that are held tightly wound by an encircling sleeve. Next, the sleeved spools are oven-fired. Then, the fired spools are impregnated with the catalytic precious metal. The impregnated sheathed spools are then oven-fired again and finally "canned" into an outer enclosure.